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windproof your farm

with ONE-ROW WINDBREAKS

AGRICULTURAL EXTENSION SERVICE
INSTITUTE OF AGRICULTURE
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Windproof your Farm with

One-Row Windbreaks

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ASK YOURSELF—"Is your farm only 'half-safe' from the destructive force of the wind?" On many Minnesota farms, trees are doing just half the job they could.

Farmers have known for a long time that rows of trees and shrubs properly located near the home and outbuildings could provide shelter and protection benefits obtainable in no other way. But more recently, it has been shown that equally important benefits are obtained when fields and crops are protected with narrow belts of trees called windbreaks.

If sweeping winds are causing loss of your valuable topsoil . . . if hot summer winds do damage to growing crops . . . if the moisture contained in the snow which is uniformly deposited over fields would be valuable to you . . . then you, too, can benefit by planting field windbreaks on your farm.

Fig. 1. End view of a one-row belt of green ash and caragana, 20 feet wide.

Fig. 2. Close-up view of Siberian elm spaced at 3-foot intervals. Note lack of weeds, dense foliage at groundline, and "filter" characteristic of tree belt.

Farmers who have windbreaks on their farms are "sold" on their advantages. Those who do not have windbreaks sometimes raise these objections: "They take up too much land." "Trees sap the ground of moisture and reduce crop yields." "They take too much time to cultivate." "Snow piles up next to the trees and delays spring work on part of the field." "The trees get too 'dirty' with weeds."

An improperly designed windbreak sometimes may deserve this sort of criticism, but **a well planned windbreak system will eliminate these objections** and save you valuable time and money. Careful planning and thinking will "pay off."

Why the Single-Row Windbreak?

A long period of trial with a new windbreak design known as the *single-row pattern type* virtually eliminates the objections most farmers have had to belts with several rows of trees. At the same time, the single-row windbreak doesn't sacrifice any of the benefits ordinarily obtained from multiple-row belts.

Single-row pattern type windbreaks, like the older style multiple-row belts, will:

- Cause snow to drift on adjacent fields and increase soil moisture for the growing season.
- Reduce moisture loss by evaporation.
- Protect newly seeded crops.
- Protect crops from hot, drying winds.
- Reduce soil losses by blowing.

Fig. 3. One-row windbreak of green ash and caragana alternately spaced 2 feet apart. One-row belts should be planted in a series of at least three belts at 20- to 40-rod intervals.

In addition, single-row belts give you certain special benefits over the multiple-row plantings. They will:

- Protect more acres of cropland with fewer trees.
- Distribute snow more uniformly over adjacent fields.
- Be easier to cultivate and maintain.
- Provide satisfactory food and cover protection for wildlife.
- Increase crop yields.
- Remain more free of weeds and grasses.

Remember this important point—*a system of field windbreaks is not intended to stop the wind "dead in its tracks."* On the contrary, windbreaks should simply function to filter the wind, and in doing this, reduce winds to gentle breezes. More than 20 years of experience on the Canadian prairies with a pattern arrangement of single-row belts have demonstrated the ability of one-row belts to do this job.

Steps in Planning and Laying Out a Pattern System of One-Row Windbreaks

1. Decide where you need windbreaks on the basis of how easily the soil blows and frequency of damaging winds.
2. Lay out a pattern of three or more one-row belts in series, parallel to one another and spaced 20 to 40 rods apart. Do not depend on just one

tree belt to do the whole job. Keep in mind also that windbreaks will lower wind speed for a maximum distance of approximately 20 times their height, therefore, a belt of tall trees will protect more field area than one made up of low trees or shrubs.

3. When practical and convenient for your field operations, place belts at right angles to the direction of the most damaging winds.

4. Space plants 4 to 6 feet apart in the row when trees alone are planted. When alternating a shrub and a tree variety in the row, space plants 2½ to 3½ feet apart. Uniform, close spacing of plants in the row is the key to maximum effectiveness with the one-row windbreak.

Recommended Varieties in Single-Row Windbreaks

When trees and shrubs are alternated in the row—

- Green ash and caragana
- Green ash and lilac (non-suckering varieties such as Chinese and Persian lilac)
- Green ash and honeysuckle
- Green ash and American plum

Fig. 4. One-row windbreak of green ash and caragana. Note absence of weeds and grass.

- Hybrid poplars (such as Robusta, Siouxland, and Norway poplar) and any one of the following:

  Russian olive, Siberian elm, purple-osier willow (tall), Amur maple

When a single tree variety is planted—

- Siberian elm (Dropmore elm, Chinkota elm, and Harbin are hardy selected strains)
- Golden willow
- Laurel-leaf willow (for better soils, also peat and muck)
- Purple-osier willow (tall)
- Boxelder

* Under even the most favorable circumstances, it should be expected that some plants will not survive the first and possibly the second growing season. In the single-row windbreak, it is especially important that these losses be replaced in order that the row be as complete as it is humanly possible to make it.

* On the coarse-textured, sandy soils in the east central and central regions of the state, deciduous plants grow very poorly and cannot be recommended; whereas several species of evergreens grow exceedingly well. They include such species as Norway pine, jackpine, ponderosa pine, and juniper. Consult your county agent, SCD conservationist, or local forester for specific recommendations.

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